

WHAT IS CLAIMED IS:

1. A method for manufacturing a siliconized surgical needle comprising the steps of:

providing a surgical needle having a surface;

5 applying a coating mixture on the surface of the needle, the coating mixture comprising at least one polydialkylsiloxane having a molecular weight sufficient to provide a viscosity of the coating mixture of at least about 10,000 cp and at least one other siliconization material; and,

10 curing the coating mixture on the surface of the needle to provide a silicone coating thereon.

2. The method of claim 1 wherein the coating mixture further comprises a first solution comprising the polydialkylsiloxane and a first solvent and a second solution comprising the siliconization material and a second solvent.

15 3. The method of claim 2 wherein the first solution comprises polydimethylsiloxane and the first solvent is at least one hydrocarbon solvent of from about 5 to about 10 carbon atoms.

4. The method of claim 2 wherein the first solution comprises polydimethylsiloxane and hexane.

5. The method of claim 2 wherein in the second solution the siliconization material comprises an aminoalkyl siloxane and at least one other siloxane copolymerizable therewith and the solvent is at least one of a hydrocarbon solvent of from about 5 to about 10 carbon atoms and an alcohol.

5 6. The method of claim 2 wherein in the second solution the siliconization material comprises a polydimethylsiloxane having amino and alkoxy functional groups and the solvent is at least one of a hydrocarbon solvent of from about 5 to about 10 carbon atoms and an alcohol.

10 7. The method of claim 5 wherein in the second solution the siliconization material comprises a polydimethylsiloxane having amino and alkoxy functional groups and the solvent is selected from the group consisting of hexane, heptane, isopropanol and mixtures thereof.

15 8. The method of claim 1 wherein the coating mixture further comprises a first solution comprising polydimethylsiloxane and a hydrocarbon solvent selected from the group consisting of hexane and heptane and a second solution comprising a polydimethylsiloxane having amino and alkoxy functional groups and a solvent selected from the group consisting of hexane, heptane, isopropanol and mixtures thereof.

9. The method of claim 1 wherein the step of applying the coating mixture on the surface of the needle is selected from the group consisting of dipping, spraying or wiping.

10. The method of claim 1 wherein the step of curing the coating mixture

5 comprises:

subjecting the coating mixture to an atmosphere of from about 20% to about 80% relative humidity, at a temperature from about 10°C to about 50°C for a time period ranging from about 1 hour to about 6 hours; and,

heating the coating mixture to a temperature of from about 100°C to about 200°C

10 for a time period ranging from about 2 hours to about 48 hours to effectively polymerize the polydialkylsiloxane and siliconization material.

11. The method of claim 8 wherein the step of curing the coating mixture comprises:

15 subjecting the coating mixture to an atmosphere of from about 20% to about 80% relative humidity, at a temperature from about 10°C to about 50°C for a time period ranging from about 1 hour to about 6 hours; and,

heating the coating mixture to a temperature of from about 100°C to about 200°C for a time period ranging from about 2 hours to about 48 hours to effectively polymerize the polydimethylsiloxane and polydimethylsiloxane having amino and alkoxy functional groups.

12. The method of claim 1 wherein the step of curing the coating mixture comprises:

subjecting the coating mixture to an atmosphere of from about 50% to about 65% relative humidity, at a temperature from about 20°C to about 35°C for a time period ranging from about 2 hours to about 4 hours; and,

heating the coating mixture to a temperature of from about 115°C to about 150°C for a time period ranging from about 15 hours to about 25 hours to effectively polymerize the polydialkylsiloxane and siliconization material.

13. The method of claim 8 wherein the step of curing the coating mixture comprises:

subjecting the coating mixture to an atmosphere of from about 50% to about 65% relative humidity, at a temperature from about 20°C to about 35°C for a time period ranging from about 2 hours to about 4 hours; and,

heating the coating mixture to a temperature of from about 115°C to about 150°C for a time period ranging from about 15 hours to about 25 hours to effectively polymerize the polydimethylsiloxane and polydimethylsiloxane having amino and alkoxy functional groups.

14. The method of claim 13 wherein the coating mixture is heated to a temperature of 140°C for 4 hours and then heated to a temperature of 120°C for 20 hours.

15. The method of claim 8 wherein the ratio of the first solution to the second solution is from about 1:6 to about 6:1.

16. A method for manufacturing a siliconized surgical needle comprising the steps of:

5 providing a surgical needle having a surface;

applying a coating mixture on the surface of the needle, the coating mixture comprising at least one polydialkylsiloxane and at least one other siliconization material which does not covalently bond with the polydialkylsiloxane; and,

10 subjecting the coating mixture on the surface of the needle to curing conditions such that the siliconization material cross-links thereby interlocking the polydialkylsiloxane in the coating to provide an interpenetrating networked coating.

17. The method of claim 16 wherein the coating mixture further comprises a first solution comprising the polydialkylsiloxane and a first solvent and a second solution comprising the siliconization material and a second solvent.

15 18. The method of claim 17 wherein the first solution comprises polydimethylsiloxane and the solvent is at least one of a hydrocarbon solvent of from about 5 to about 10 carbon atoms and the second solution comprises an aminoalkyl siloxane and at least one other siloxane copolymerizable therewith and the solvent is at least one of a hydrocarbon solvent of from about 5 to about 10 carbon atoms and an alcohol.

19. The method of claim 17 the coating mixture further comprises a first solution comprising polydimethylsiloxane and a hydrocarbon solvent selected from the group consisting of hexane and heptane and a second solution comprising a polydimethylsiloxane having amino and alkoxy functional groups and a solvent selected from the group consisting of hexane,
5 heptane, isopropanol and mixtures thereof.

20. The method of claim 16 wherein the step of subjecting the coating mixture to curing conditions comprises:

subjecting the coating mixture to an atmosphere of from about 20% to about 80% relative humidity, at a temperature from about 10°C to about 50°C for a time period ranging
10 from about 1 hour to about 6 hours; and,

heating the coating mixture to a temperature of from about 100°C to about 200°C for a time period ranging from about 2 hours to about 48 hours.

21. The method of claim 19 wherein the step of subjecting the coating mixture to curing conditions comprises:
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subjecting the coating mixture to an atmosphere of from about 50% to about 65% relative humidity, at a temperature from about 20°C to about 35°C for a time period ranging from about 2 hours to about 4 hours; and,

heating the coating mixture to a temperature of from about 115°C to about 150°C
20 for a time period ranging from about 15 hours to about 25 hours.

22. A surgical needle having a coating thereon, the coating formed from a coating mixture comprising at least one polydialkylsiloxane having a molecular weight sufficient to provide a viscosity of the coating mixture of at least about 10,000 cp and at least one siliconization material.

5 23. The surgical needle of claim 22 wherein the coating mixture further comprises a first solution comprising the polydialkylsiloxane having a molecular weight sufficient to provide a viscosity of the coating mixture of at least about 10,000 cp and a first solvent and a second solution comprising the siliconization material and a second solvent.

10 24. The surgical needle of claim 23 wherein in the coating mixture the first solution comprises polydimethylsiloxane and a hydrocarbon solvent selected from the group consisting of hexane and heptane and the second solution comprises an aminoalkyl siloxane and at least one other siloxane copolymerizable therewith and a solvent selected from the group consisting of hexane, heptane, isopropanol and mixtures thereof.

15 25. The surgical needle of claim 23 wherein in the coating mixture the first solution comprises a polydimethylsiloxane and a hydrocarbon solvent selected from the group consisting of hexane and heptane and the second solution comprises a polydimethylsiloxane having amino and alkoxy functional groups and a solvent selected from the group consisting of hexane, heptane, isopropanol and mixtures thereof.

26. A surgical needle having an interpenetrating networked coating thereon, the coating formed from a coating mixture comprising at least one polydialkylsiloxane and at least one other siliconization material which does not covalently bond with the polydialkylsiloxane.

27. The surgical needle of claim 26 wherein the coating mixture further
5 comprises a first solution comprising polydimethylsiloxane and a first solvent and a second solution comprising the siliconization material and a second solvent.

28. The surgical needle of claim 27 wherein in the coating mixture the first
10 solution comprises polydimethylsiloxane and a hydrocarbon solvent selected from the group consisting of hexane and heptane and the second solution comprises an aminoalkyl siloxane and at least one other siloxane copolymerizable therewith and a solvent selected from the group consisting of hexane, heptane, isopropanol and mixtures thereof.

29. The surgical needle of claim 27 wherein in the coating mixture the first
15 solution comprises a polydimethylsiloxane and a hydrocarbon solvent selected from the group consisting of hexane and heptane and the second solution comprises a polydimethylsiloxane having amino and alkoxy functional groups and a solvent selected from the group consisting of hexane, heptane, isopropanol and mixtures thereof.